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Introduction to Cyber Security

Understanding Network Security

Feb 2021

TATA TRUSTS

Agenda

In today's session, you will learn about:

- Different types of Network Security
- Access Control
- Application Security
- Firewalls
- Virtual Private Networks(VPN)
- Intrusion Prevention/Detection System

What are the Types of Network Securities?

Created by fae frey
from Noun Project

Different types of Network Security

Network security is an integration of multiple layers of defenses in the network and at the network. Policies and controls are implemented by each network security layer

Antivirus and Antimalware Software

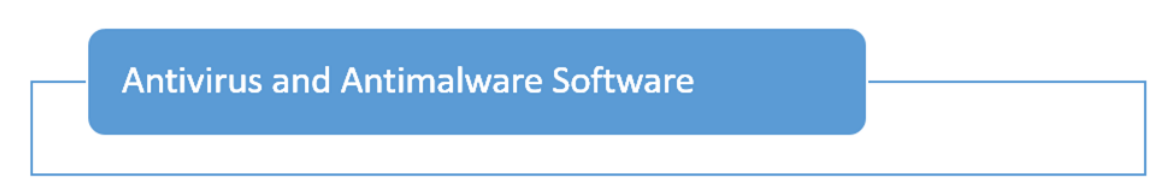
Application Security

Network Access Control (NAC)

Firewalls

Wireless Security

Different types of Network Security



Antivirus and Antimalware Software

This software is used for protecting against malware, which includes spyware, ransomware, Trojans, worms, and viruses.

Different types of Network Security

Application Security

To secure the loopholes of your application from the perpetrators. It broadly tracks the procedure of finding your application’s vulnerabilities followed by fixing and preventing them from any cyberattack.

Different types of Network Security

Network Access Control (NAC)

Helps us to control who can access our network. It is essential to recognize each device and user in order to keep out potential attackers. This indeed will help us to enforce our security policies

Different types of Network Security

Firewalls

Firewalls place a barrier between the trusted internal network and untrusted outside networks, like the Internet. A firewall can be software, hardware, or both and to block(or) allow traffic

Different types of Network Security

Wireless Security

If we have a business that is primarily dealing with a lot of emails. Phishing attacks can severely compromise your business operations. So, Email security is priority.

Knowledge Check

Name of the Activity

Behind the Door Number

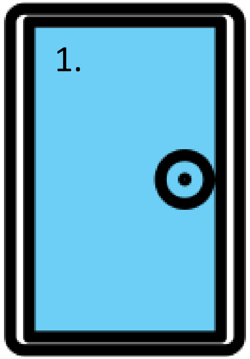
Instructions

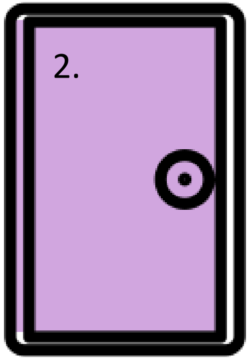
Mode: **In-session**

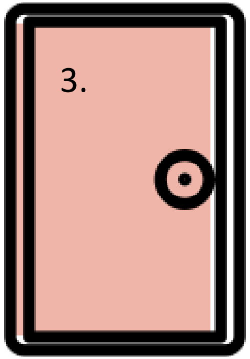
Duration: **5 minutes**

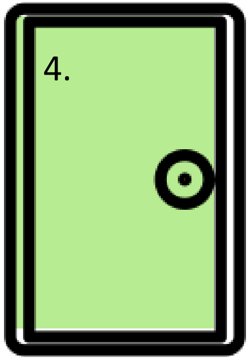
Materials Required: **None**

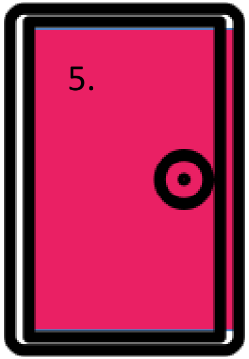
Knowledge Check – Behind the Door Number









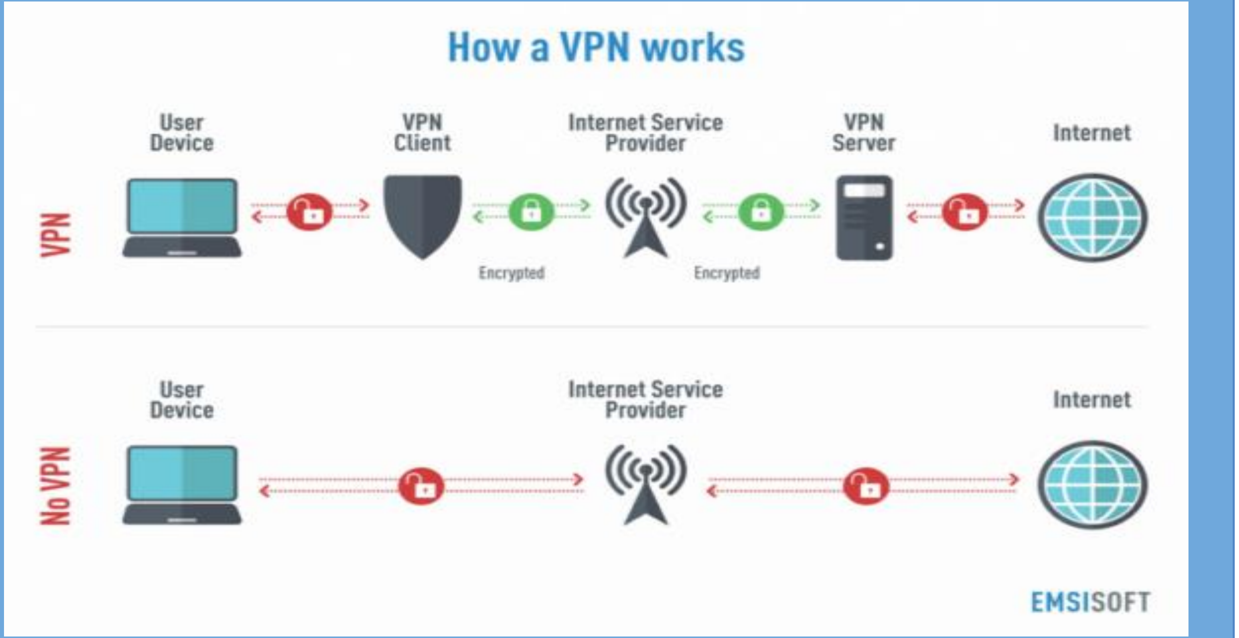


Source: Noun project

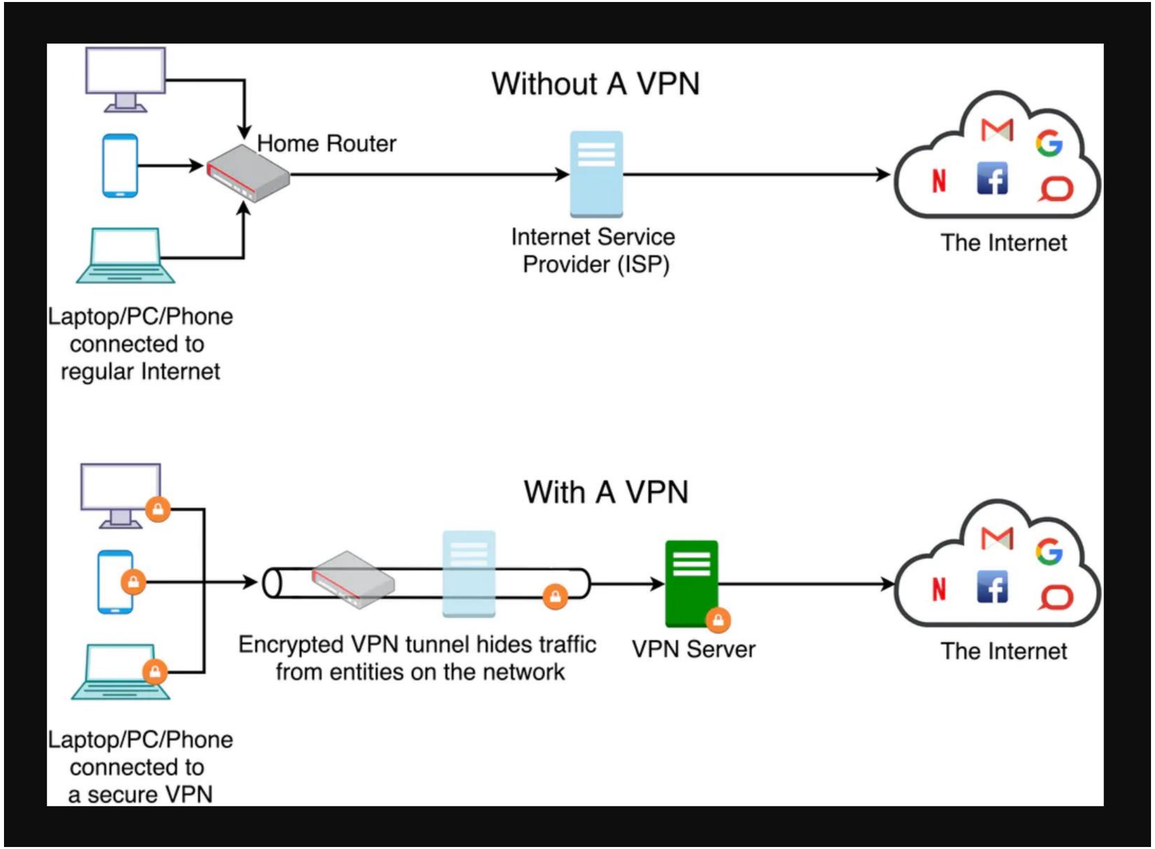
What is a VPN?

Created by fae frey
from Noun Project

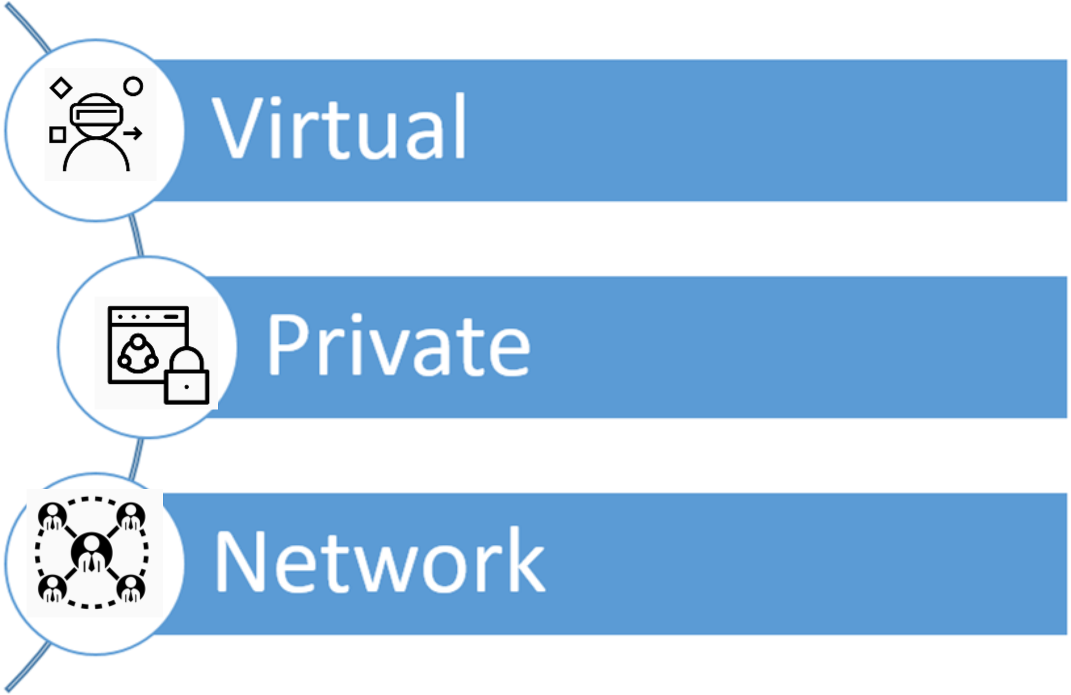
Virtual Private Network (VPN)



Virtual Private Network (VPN)


Without A VPN
Home Router
Internet Service Provider (ISP)
The Internet
Laptop/PC/Phone connected to regular Internet
With A VPN
Encrypted VPN tunnel hides traffic from entities on the network
VPN Server
The Internet
Laptop/PC/Phone connected to a secure VPN

Why is it called VPN?



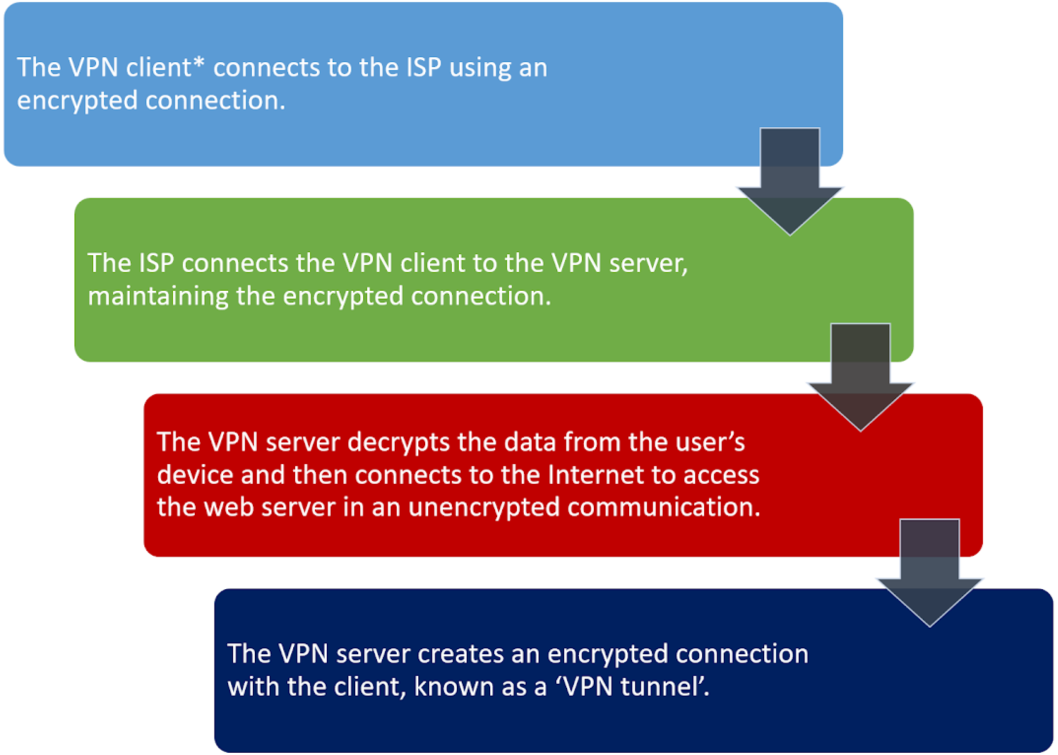
Virtual

Private

Network

VPN Connection Steps

A VPN connection involves the following 4 steps:



The VPN client* connects to the ISP using an encrypted connection.

The ISP connects the VPN client to the VPN server, maintaining the encrypted connection.

The VPN server decrypts the data from the user's device and then connects to the Internet to access the web server in an unencrypted communication.

The VPN server creates an encrypted connection with the client, known as a 'VPN tunnel'.

Think Tank

What is the key difference between Firewalls and Wireless Security?

Created by fae frey
from Noun Project

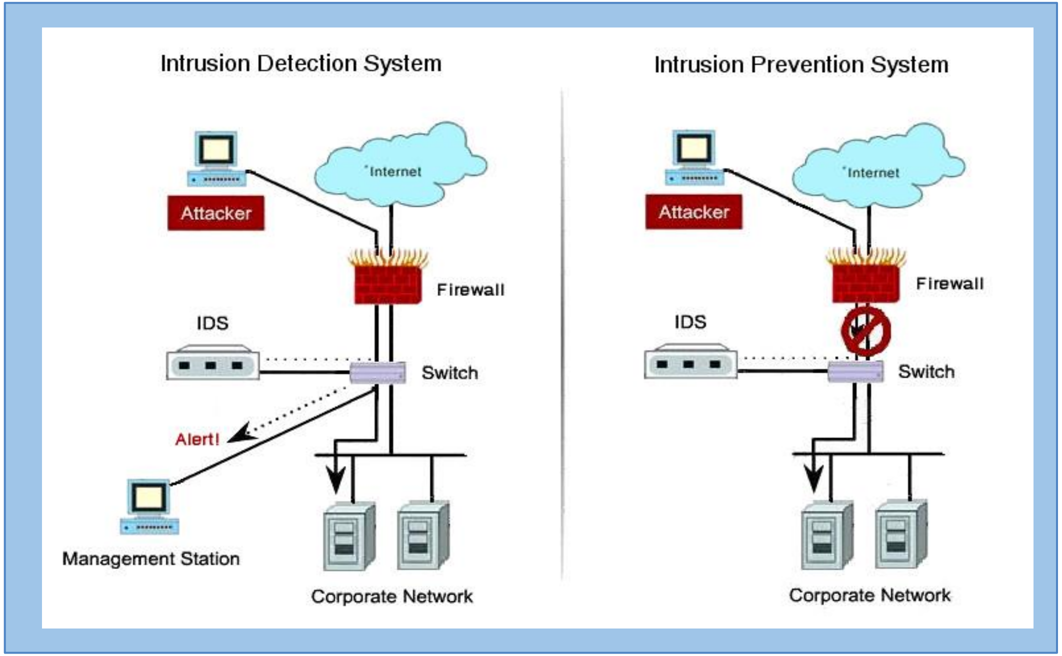
Intrusion Prevention/Detection System

Intrusion Detection System (IDS)

- Network Based

Intrusion Prevention System (IPS)

- Host Based

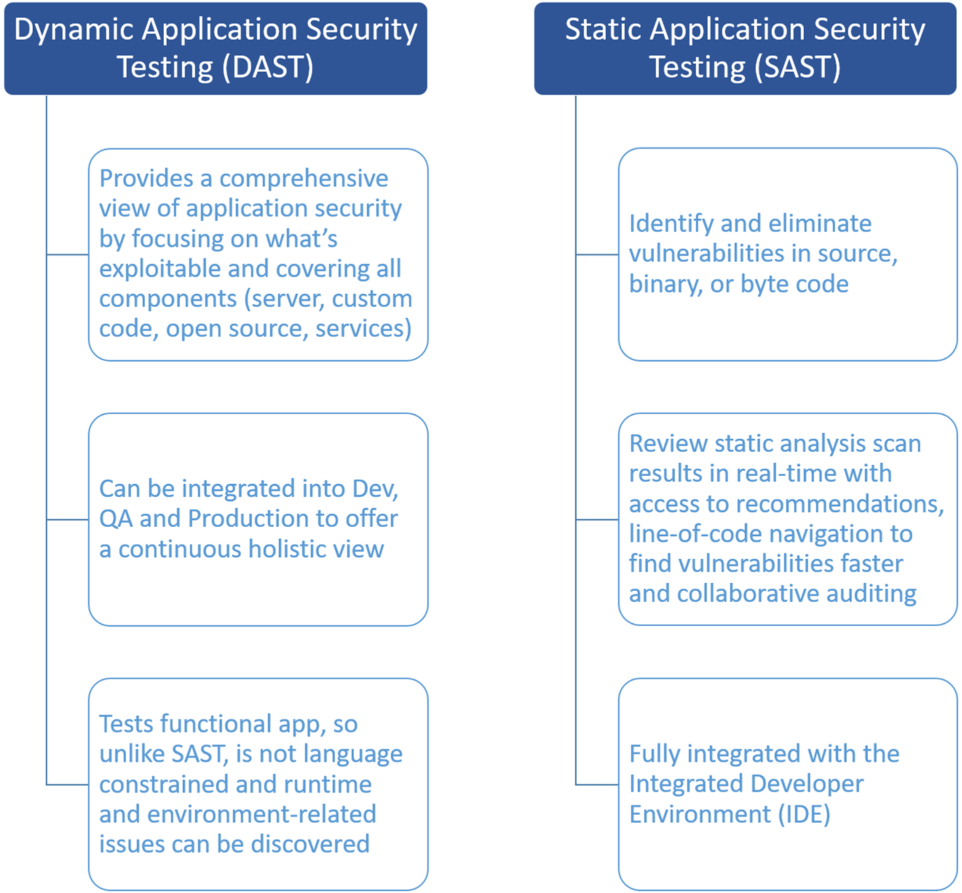


Application Security

Application security is the discipline of processes, tools and practices aiming to protect applications from threats throughout the entire application lifecycle

Source: Security Intelligence

Types of Application Security Testing and their Benefits



Dynamic Application Security Testing (DAST)

- Provides a comprehensive view of application security by focusing on what's exploitable and covering all components (server, custom code, open source, services)
- Can be integrated into Dev, QA and Production to offer a continuous holistic view
- Tests functional app, so unlike SAST, is not language constrained and runtime and environment-related issues can be discovered

Static Application Security Testing (SAST)

- Identify and eliminate vulnerabilities in source, binary, or byte code
- Review static analysis scan results in real-time with access to recommendations, line-of-code navigation to find vulnerabilities faster and collaborative auditing
- Fully integrated with the Integrated Developer Environment (IDE)

Name of the Activity

Taboo

Instructions

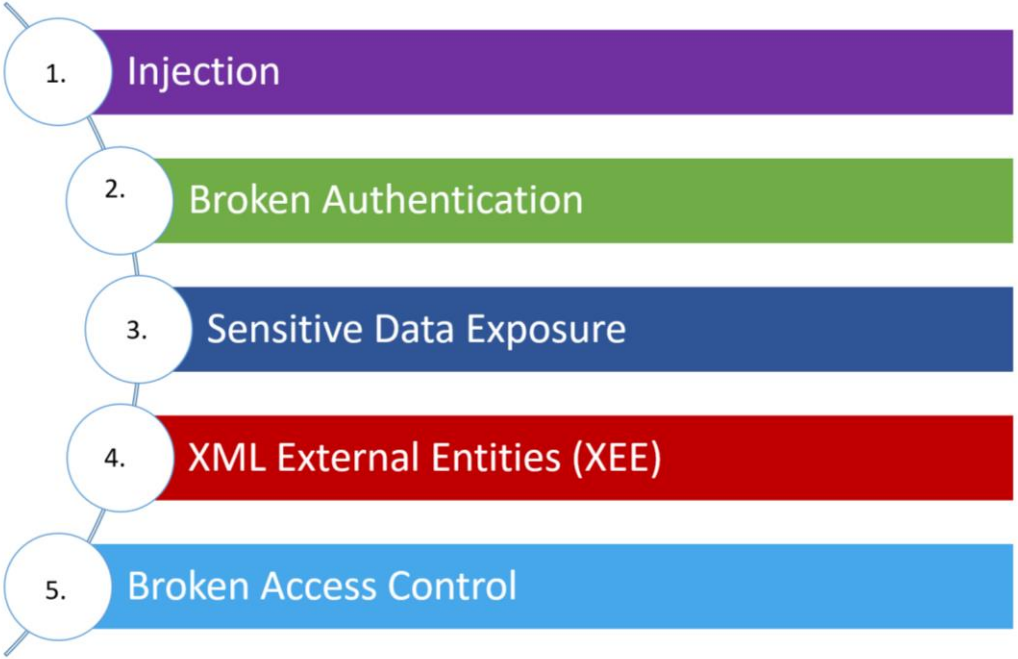
Mode: **In-session**

Duration: **5 minutes**

Materials Required: **None**

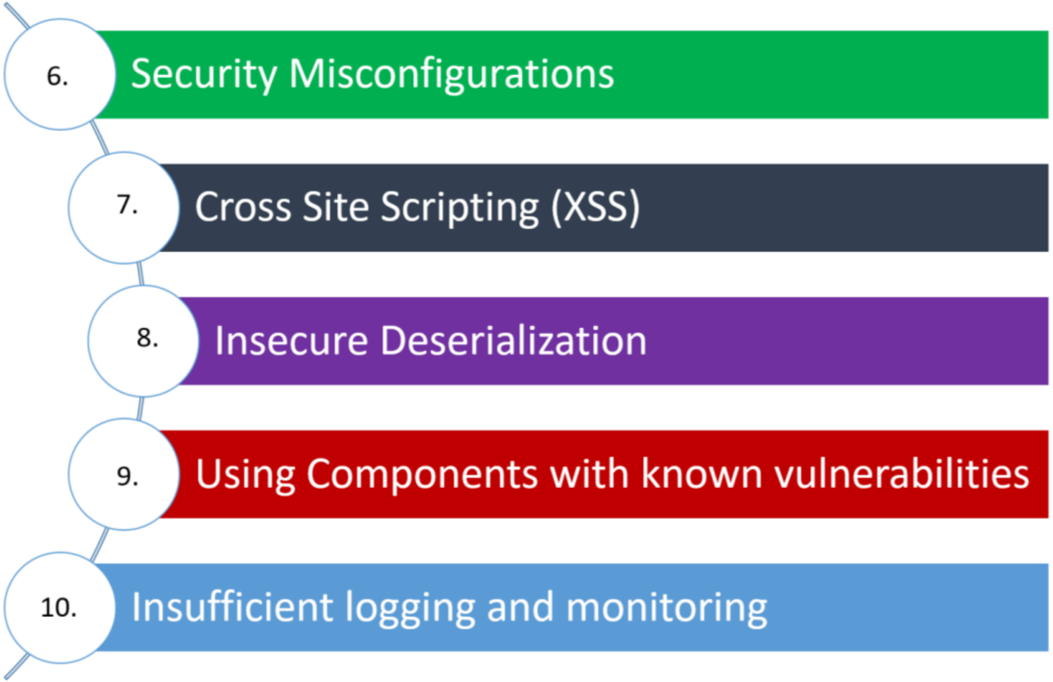
OWASP Top 10 Risks and Protection

OWASP Top 10 is regularly-updated report outlining security concerns for web application security, focusing on the 10 most critical risks. Those are



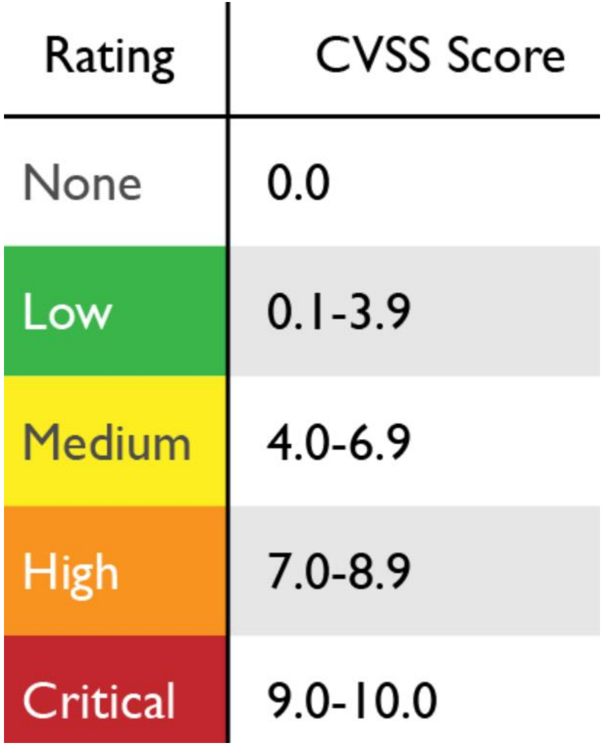
1. Injection
2. Broken Authentication
3. Sensitive Data Exposure
4. XML External Entities (XEE)
5. Broken Access Control

OWASP Top 10 Risks and Protection



6. Security Misconfigurations
7. Cross Site Scripting (XSS)
8. Insecure Deserialization
9. Using Components with known vulnerabilities
10. Insufficient logging and monitoring

CVSS Score



Rating	CVSS Score
None	0.0
Low	0.1-3.9
Medium	4.0-6.9
High	7.0-8.9
Critical	9.0-10.0

Activity

Name of the Activity

Fill in the Blanks

Instructions

Mode: **In-session**

Duration: **5 minutes**

Materials Required: **None**

Activity – Fill in Blanks

1. _______is the discipline of processes, tools and practices aiming to protect applications from threats throughout the entire application lifecycle

Application Security

2. __________ is used for protecting against malware, which includes spyware, ransomware, Trojans, worms, and viruses.

Antivirus and Antimalware Software

3. The detection system which monitors the characteristics of a single host and the events occurring within that host for suspicious activity is called _____________

Host Based

4. What can be integrated into Dev, QA and Production to offer a continuous holistic view?

Dynamic Application Security Testing (DAST)

5. The act of encrypting a connection over the Internet from its endpoint to a network is defined as _________

Virtual Private Network (VPN)

6. What category do Broken Authentication and XML External Entities (XXE) fall into?

OWASP Most Critical Risks

Summary

In this session, you learnt about:

- Different types of network security
- Network Access control
- Application Security
- Firewalls
- VPN